

components of the Wilson Cleary Model. **METHODS:** 212 persons with a variety of advanced cancer from the McGill University Health Center (MUHC) were evaluated using nine patient-reported outcomes and seven direct measures over a course of 18 months. As an attempt to minimize measurement error, Rasch measurement was used to model symptoms, function, general health perceptions (GHP), and overall quality of life (QOL) latent constructs. Additionally, biological variables were measured. The latent QOL construct was then modeled over time using "group-based modeling". Probability of group membership was finally predicted using the different biological, symptoms, function, and GHP constructs of the Wilson-Cleary model at study entry, which coincided with the time of cancer diagnosis. **RESULTS:** The Rasch QOL model over time resulted in 5 distinct trajectories: a linear increasing trajectory representing 26% of the sample, two flat medium and high trajectories representing 26 and 17% respectively, a quadratic increasing trajectory representing 25% of the sample, and a linear decreasing trajectory representing 5% of the sample. The latent constructs from the time of diagnosis that statistically significantly predicted membership in a QOL trajectory were age, sex, cancer type, recalled weight loss, CRP, social support, emotional status, and fatigue. **CONCLUSIONS:** Using Rasch, group-based trajectory modeling, and linear regression, we were able to discriminate between relevant QOL subgroups of patients. Most importantly, we were able to predict QOL trajectory from the time of diagnosis with advanced cancer. This enabled us to make preliminary conclusions about the most important contributors to QOL over time, and emphasize the importance in assessing these constructs in people with cancer.

PRM68

BIAS WHEN ADJUSTING FOR SURROGATES OF CONFOUNDERS

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OBJECTIVES: High-dimensional propensity score (HDPS) methods have been used in health care claims data in an attempt to control confounding by adjusting for a large number of covariates that may be proxies for unobserved factors. We have previously shown that PS models are biased with non-linear link functions. We conducted a Monte Carlo simulation study to understand whether inclusion of covariates that are children of unmeasured confounders and other unmeasured parents of the outcome variable (colliders) may bias the relationship between exposure and outcome by estimating mean bias, and standard errors. **METHODS:** We used directed acyclic graphs to replicate the causal network of plausible confounding scenarios. We simulated a scenario where the outcome variable Y is a function of a confounder, C, and another parent, U, but not of exposure X (function of C). Covariate Z is a function of parents C and U. All variables had normally distributed random errors. We conducted Monte Carlo simulations of the causal network, with varying strengths of each of the causal relations, and estimated the effect of X on Y, using linear regression models, while adjusting for covariate Z. **RESULTS:** Correctly specified models were unbiased. Bias was large in models with X only (bias 1.5 with variable standard errors). There was some reduction in bias in some situations where Z was highly correlated with the confounder, C, but increased bias when much of the variance in Y was determined by U. **CONCLUSIONS:** Adjustment for colliders that are children of unmeasured determinants of the outcome variable, but not of the exposure, may also increase bias. This is of great importance in observational studies, particularly when using HDPS to adjust for large numbers of variables that are not true confounders. Researchers should always use causal knowledge when using data to make causal inference.

PRM69

SIZE DISTORTION OF HYPOTHESIS TESTS FOR TWO-STAGE LEAST SQUARES MODEL: WHAT THE RULE OF THUMB CAN'T GIVE YOU?

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OBJECTIVES: Big data approaches may lead to multiple strong instrumental variables (IV), significantly improving the performance of two-stage least squares model (TSLS). The current rule of thumb for detecting weak IV is based on the goal of keeping relative bias of TSLS less than 0.1. With the increasing number of IVs, we need to examine the impact of weak IV on hypothesis testing. We investigated whether or not the rule of thumb can be efficient enough to prevent size distortion of hypothesis testing for TSLS? **METHODS:** We used a Monte Carlo approach to create 28 original data sets for different models with the number of IVs varying from 3 to 30. For each model, we created 2000 observations and conducted 50,000 iterations to reach a converged outcome. The relationship between the endogenous variable and IVs was carefully adjusted to let the F statistics for the first stage model equal 10 (rule of thumb). The mean value of relative bias and percent of false rejection for each model were recorded and compared across all the models. **RESULTS:** The relative bias of TSLS equaled 0.1 constantly across all the models in the study. However, the likelihood of rejecting a true hypothesis increased when the number of IVs in the model increased while holding the F statistics for the first stage model equal to 10. And this likelihood exceeded 10% when TSLS had 24 IVs and exceeded 15% when TSLS had 30 IVs. **CONCLUSIONS:** When more IVs were added into the TSLS model, the rule of thumb was no longer an efficient guarantee for good performance in hypothesis testing. A more restricted margin for F statistics is needed to be explored to improve the rule of thumb, especially when the number of IVs could be large in the context of big data.

PRM70

DEPRESSION AND COMORBID OBESITY AND HYPERTENSION IN UNITED STATES CHILDREN

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OBJECTIVES: To investigate the association between depression and comorbid obesity and hypertension in US children over a 8-year period using data from the

National Health and Nutritional Examination Survey among those with depression or hypertension. **METHODS:** We built a logistic regression model using a sample of 727 respondents aged 0-18 between 2005 and 2012. **RESULTS:** Out of 727 subjects, 49.2% were female, 50.1% were male, 11.5% were between the ages of 0-5, 37.8% between the ages of 6-10, 26% between the ages of 11-15, 24.5% between the ages of 16-18, 28.7% were White, 71.3% were non-White, 16.4% were obese and 3.6% had hypertension. Obesity and hypertension are significant predictors of depression. Children who are obese are about 2.9 times more likely ($p=0.005$) to be depressed than children who are not obese, and children who suffer from hypertension are approximately 4.6 times more likely ($p<0.001$) to experience depression than those who do not have hypertension. Other significant predictors of depression in children are gender ($p<0.001$; OR=0.486) and family size ($p=0.06$; OR=0.673). **CONCLUSIONS:** Obesity and hypertension are associated with depression after controlling for other factors. This finding has important implications for depression management in children. It brings into focus the maintenance of a healthy body mass index (BMI) in mitigating depression.

PRM71

ANXIETY AND COMORBID OBESITY AND HYPERTENSION IN UNITED STATES CHILDREN

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OBJECTIVES: To investigate the association between anxiety and comorbid obesity and hypertension in US children over a 8-year period using data from the National Health and Nutritional Examination Survey among those with anxiety or hypertension. **METHODS:** We built a logistic regression model using a sample of 717 respondents aged 0-18 between 2005 and 2012. **RESULTS:** Out of 717 subjects, 49.2% were female, 50.1% were male, 11.5% were between the ages of 0-5, 37.8% between the ages of 6-10, 26% between the ages of 11-15, 24.5% between the ages of 16-18, 28.7% were White, 71.3% were non-White, 16.4% were obese and 3.6% had hypertension. Obesity is a significant predictor of anxiety. Obese children are about 2.1 times more likely ($p=0.0002$) to suffer from anxiety compared with children who are not obese. A significant association was also found between anxiety and gender ($p=0.05$; OR=0.341) and family income ($p=0.06$; OR=1.012). **CONCLUSIONS:** Obesity predicts the prevalence of anxiety in children. The implication is that maintaining a healthy body mass index (BMI) in children could significantly reduce the prevalence of anxiety in children.

PRM72

THE IMPACT OF TWO DIFFERENT CASE DEFINITIONS OF MAJOR CONGENITAL MALFORMATIONS IDENTIFIED FROM QUEBEC (CANADA) ADMINISTRATIVE DATABASES ON THEIR ASSOCIATION WITH ASTHMA CONTROLLER MEDICATIONS TAKEN DURING PREGNANCY

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BACKGROUND & OBJECTIVES: Accurate identification of major malformation cases from administrative databases is crucial for perinatal epidemiology. In Quebec, most of major malformations are detected in hospital, however administrative databases capture diagnoses data from both hospitals and other medical facilities. We aimed to compare the prevalence of major congenital malformations identified from administrative databases diagnostic codes (ICD-9 and ICD-10) with 2 definitions: diagnoses made in hospital only vs. diagnoses made in hospital and other medical facilities. We further evaluated the impact of using each definition to quantify the association between maternal use of asthma controller medications and the prevalence of major malformations at birth and during the first year of life. **METHODS:** A cohort of pregnancies from asthmatic women between 1990 and 2010 was formed through the linkage of administrative databases from Quebec. We calculated the prevalence of major malformations identified in the 1st year of life of the newborn using the 2 case definitions. We also calculated the crude odds ratio (OR) of major malformations associated with maternal use of inhaled corticosteroids (ICS) and long-acting beta₂-agonists (LABA) in the 1st trimester of pregnancy. **RESULTS:** From 30655 pregnancies, 2090 (6.8%) major malformations were identified with hospital diagnostic codes only vs. 2748 (9.0%) with hospital and other medical facilities diagnostic codes. The OR of major malformations associated with ICS was 1.1 (95%CI: 1.0-1.2) with the first and 1.1 (95%CI: 1.0-1.2) with the second case definition. Corresponding results were 1.3 (95%CI: 1.0-1.6) and 1.1 (95%CI: 0.9-1.4) for LABA exposure. **CONCLUSIONS:** The case definition of congenital malformations had a considerable impact on the prevalence of major congenital malformations, but less impact on the associations we examined. The percentage of false positive cases when using all medical facilities diagnostic codes in the case definition is unknown and should be the objective for future research.

PRM73

SURVIVAL MODELING FOR THE ESTIMATION OF TRANSITION PROBABILITIES IN MODEL-BASED ECONOMIC EVALUATIONS IN THE ABSENCE OF INDIVIDUAL PATIENT DATA: A TUTORIAL

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OBJECTIVES: Survival modeling techniques are increasingly being used as part of decision modeling for health economic evaluations. As many models are available, it is imperative for researchers to know about the steps in selecting and using the most suitable ones. This paper is aimed at proposing a tutorial for the application of appropriate survival modeling techniques to estimate transition probabilities, for use in model-based economic evaluations, in the absence of individual patient data. The use of the proposed tutorial is illustrated based on the final progression-free survival (PFS) analysis of BOLERO-2 trial in metastatic breast cancer (mBC). **METHODS:** An algorithm was adopted from Guyot and colleagues, and was then run in the statistical package R to reconstruct individual patient data (IPD), based on the final